# Colorado River Indian Tribes

# CRIT UNIFIED WATERSHED ASSESSMENT

# FOR THE

# COLORADO RIVER INDIAN RESERVATION

***Submitted in accordance with the Clean Water Action Plan***

***Prepared by***

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**February 27, 1999**

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## 1.0 Background

General Information.

The Colorado River Indian Tribe (CRIT) are comprised of members from the following Tribes: Hopi, Navajo, Chemehuevi, and Mojave. The Colorado River Indian Reservation is located in La Paz County, Arizona, with smaller areas in both Riverside and San Bernardino Counties, California (see Figure 1). Total area is 268,691 acres, with 42,696 acres in California. The Reservation is 45 miles long by 12 miles wide. The total Reservation population is 7,865 (1990 census). The town of Parker, Arizona is located within the Reservation, with a population of 2,897. Approximate service area population is over 11,000 people. Tribal membership is 3,108 people.

Purpose of Report.

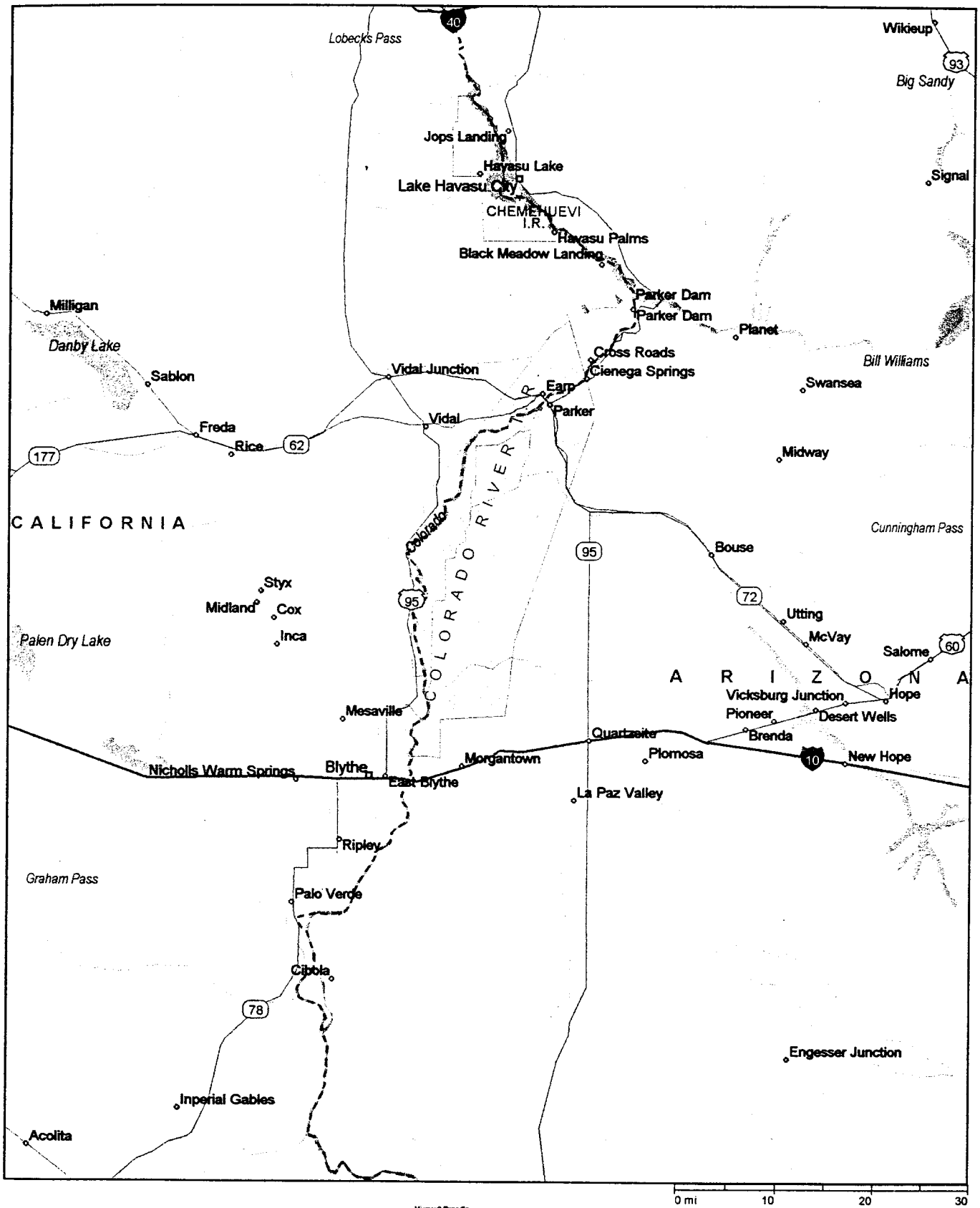
This unified watershed assessment report is produced for the Colorado River Indian Reservation in response to the Clean Water Action Plan released by President William Clinton and Vice-President Albert Gore on February 19, 1998 (Environmental Protection Agency 1998). The Clean Water Action Plan requests Tribes and States to develop a unified watershed assessment (UWA) of waterbodies within areas of jurisdiction. The UWA is to be used to guide allocation of new federal funds to Tribes and States for watershed protection, The Clean water Action Plan calls for watersheds to be placed into one of four categories (Table 1).

**Table 1. Watershed Categories for the Unified Watershed Assessment**

| Category | Criteria |
|---|---|
| I | Watersheds in need of restoration due to impaired water quality or not meeting other natural resource goals |
| II | Watersheds with good water quality that meet all natural resource goals, but need preventive action to sustain water quality and aquatic ecosystems |
| III | Watersheds with pristine or sensitive areas that need an extra measure of water quality protection, but that are not impaired |
| IV | Watersheds where more information is needed in order to categorize them |

The watershed protection framework builds on efforts to protect and restore water quality by developing site-specific, interdisciplinary programs focused on watersheds where human health concerns and ecological assessments indicate the strongest need for pollution control. The UWA acts

# Figure 1. Colorado River Indian Reservation Location Map

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to fulfill the commitment to meeting water quality goals by managing whole watersheds through development of cooperative watershed management plans which consider cumulative chemical, physical, and biological effects of human impacts on waterbodies watershed-wide.

The degradation of riverine systems as well as the extinction of the biodiversity associated with the stream-riparian system are evident on the reservation. Stream pollution, habitat degradation, and reductions in native cultural plants are issues that will be addressed using the UWA approach to prioritize watershed restoration projects.

Water Resources.

The reservation includes about 57 miles of the Colorado River. Extensive levees have been constructed along both river banks throughout the reservation. This reach of the Colorado River, nonetheless, is heavily used for recreation, including boating, fishing, swimming, and picnicking. Resort developments skirt the Arizona river bank on the upper end of the reservation. Another large tribal development known as Big River is located on the California side of the river. Other smaller river-side developments occur downstream on the reservation along the California side.

The tribal regional water system includes 2,650 water connections. Parker, Arizona has its own water system with 2,500 connections. There are another 1,050 connections in various Arizona mobile home parks and 500 more in the Big River development in California. The reservation also has about 500 water wells.

There are 22 surface waterbodies located on the reservation in addition to the irrigation canals and the Colorado River. Most of these are small lakes, ponds, and wetlands located adjacent to the banks of the Colorado River. The principal lakes include: Lake Moovalya, Backwater Lake and Deer Island Lake at the north end; Lost Lake, No-Name Lake and 12-Mile Lake in the middle; and La Paz Lake and Dike pond at the south end of the reservation. Water in these lakes appears to be derived mainly form subsurface inflows of the Colorado River. The volume and surface area of the lakes fluctuate seasonally with flows in the Colorado River. Photographs of selected waterbodies are presented in Appendix A.

Most of the Reservation lakes are stocked with rainbow trout (*Oncorhyncus mykiss*) and have self-reproducing populations of largemouth bass (*Micropterus salmoides*), crappie (*Pomoxis nigromaculatus*) and bluegill sunfish (*Lepomis machrochirus*). The lakes are all accessible to the

public and are used extensively by fishermen year round. The fisheries are managed and regulated by Tribal fish and game agents.

Deer Island Lake and No-Name Lake are also used for swimming, and 12-Mile Lake is a popular picnic area for tourists and tribal members. An extensive resort area has developed on leased Tribal land at Lost Lake. Several hundred people currently live in RV and mobile home parks at the resort.

## 2.0 Watershed Boundaries and Significant Waterbodies

The watershed boundary system used in this assessment is based on the U.S. Geological Survey's hydrologic units. The Colorado River Indian Reservation land area is within three watershed boundaries as follows:

- Bouse Wash (USGS Hydrologic Unit # 15030105
- Imperial Reservoir (USGS Hydrologic Unit # 15030104)
- Tyson Wash (USGS Hydrologic Unit # 15030106)

All waterbodies on the Colorado River Indian Reservation, except Bouse Wash and Tyson Wash, are within the Imperial Reservoir watershed. Note that irrigation canals and ditches transect both Bouse Wash and Tyson Wash, but the irrigation water is from the Colorado River which is within the Imperial Reservoir Watershed.

Significant waterbodies on the Colorado River Indian Reservation are as follows:

- 'Ahakahv Preserve Lake
- Backwater Lake
- Bouse Wash
- Colorado River
- Deer Island Lake
- Goodman Wash
- Lake Moovalya
- Levee Drain
- Lost Lake
- Lower Main Drain
- Main Canal
- Main Drain
- No-Name Lake
- Seventy Wash
- Twelve-Mile Lake
- Tyson Wash

This UWA report will assess waterbodies within each of the three watersheds on the Colorado River Indian Reservation using the USGS watershed system.

## 3.0 Criteria Used to Determine Category I through V Watersheds

Evaluations used to determine beneficial use impairment are based on CRIT's draft water quality standards (WQTI 1998) and the best professional judgement of the CRIT Environmental Protection Office Staff. Evaluations to determine ground water vulnerability are based on field reconnaissances, USGS studies (USGS 1973), water quality studies (BIA 1982; BOR 1979; IHS 1987; Rural Community Assistance Corporation 1996) and over fifteen years of ground water quality data on individual wells and tribal public water system wells. Evaluations of the pristine nature or aquatic system sensitivity of a waterbody are based on the best professional judgement of the CRIT Environmental Protection Office Staff. Criteria established for determining categories I through IV watersheds are presented in Table 2.

The three watersheds on the reservation were assessed with respect to water quality impairment of waterbodies. Sufficient data were either available or obtained through personal conversations with knowledgeable Tribal employees staff and field reconnaissances accompanied by Tribal employees.

**Table 2. Criteria for Establishing Category I through IV Watersheds**

| Category | Criteria to Establish Category |
|---|---|
| I | Watershed has impaired beneficial uses (based on best professional judgement of the CRIT Environmental Protection Office Staff)<br>or<br>Watershed identified as needing improvements in protecting cultural beneficial uses (based on best professional judgement of the Director of the CRIT Environmental Protection Office)<br>or<br>Watershed contributes to impairment of ground water used as a public water source (based on EPA Drinking Water Section data on CRIT's public water systems and best professional judgement of the CRIT Environmental Protection Office Staff) |
| II | Sufficient information is available to make a determination that the watershed is not impaired, does not need improvements in protecting cultural uses, and does not contribute to impairment of ground water used as a public water system (based on best professional judgement of the CRIT Environmental Protection Office Staff) |
| III | Watershed contains exceptionally pristine water quality (based on best professional judgement of the CRIT Environmental Protection Office Staff)<br>or<br>Watershed contains sensitive aquatic system conditions (based on best professional judgement of the CRIT Environmental Protection Office Staff)<br>or<br>Watershed contains drinking water sources (based on EPA Drinking Water Section data on public water systems and best professional judgement of the CRIT Environmental Protection Office Staff) |
| IV | Insufficient data on watershed are available to make a water quality assessment |

## 4.0 Unified Watershed Assessment Process and Ranking System

The UWA process developed for the Colorado River Indian Reservation involves coordination between the Director and staff of the CRIT Environmental Protection Office. The development of the assessment is based on the following understandings: (1) the UWA is to be used to acquire new federal funding under Clean Water Act Sections 106 and 319; (2) the UWA is not to be used for regulatory enforcement actions; and (3) the UWA is a dynamic document that is subject to modification and improvement as better or more complete information becomes available.

The UWA process was initiated by the CRIT Environmental Protection Office in September 1998 and involved four steps: (1) reviewing water quality and land use literature for the Colorado River Indian Reservation and surrounding watershed areas, (2) meeting with Tribal and federal agency personnel responsible for water resources management on the CRIT reservation, (3) conducting a reconnaissance of Tribal waterbodies, and (4) conducting a water quality impairment evaluation for each waterbody.

The UWA evaluation identified indicators of water quality impairment and non-support of beneficial uses for each waterbody (Table 3). The ranking system presented in Table 3 was then used to determine the extent of impairment to each waterbody.

**Table 3. Ranking System for Waterbodies with Water Quality Impairment**

| Ranking Determination | Evaluation Parameters |
|---|---|
| One (1) point for each indicator causing water quality impairment to a waterbody | **Indicators**<br>• Agricultural Return Flows<br>• Cultural Plant Loss<br>• Fish Consumption Advisory<br>• Ground Water Vulnerability<br>• Occurrence of Hydrocarbons in Ground Water<br>• Occurrence of Pesticides in Ground Water<br>• Plant Diversity Loss<br>• Riparian Habitat Loss<br>• Stream Channelization<br>• Unknown Toxicity of a Toxicant<br>• Watershed Nitrogen Export<br>• Wildlife Consumption Advisory |
| Two (2) points for each beneficial use that is determined to be non-supported in the waterbody | **Beneficial Uses**<br>• Agricultural Irrigation<br>• Agricultural Livestock Watering<br>• Aquatic & Wildlife (effluent-dependent water)<br>• Aquatic & Wildlife (ephemeral)<br>• Aquatic & Wildlife (warmwater)<br>• Cultural<br>• Domestic Water Source<br>• Fish Consumption<br>• Full Body Contact<br>• Partial Body Contact<br>• Unique Waters (proposed) |

## 5.0 Criteria Used for Prioritizing Category I Watersheds

The unified watershed assessment process followed for the Colorado River Indian Reservation consists of two major steps: (1) categorize each watershed into one of four categories, and (2) prioritize those watersheds in category I based on needed protection and restoration of impaired waterbodies.

The CRIT Environmental Protection Office approach for prioritizing category I watersheds is to arrive at a consensus of restoration priority between Environmental Protection Office staff. The prioritization process included considerations of: (1) the most needed restoration projects, (2) ranking scores for each waterbody, and (3) projects capable of being completed by the end of federal fiscal year 2000 (i.e., September 30, 2000).

The results of the assessment indicated that none of the waterbodies in the Bouse Wash Watershed or the Tyson Wash Watershed were category I. Waterbodies within the Imperial Reservoir Watershed, which was determined to be category I, are listed in Table 4. Table 4 lists the ranking of the water quality impaired waterbodies on the Colorado River Indian Reservation as well as the restoration priority of each category I watershed. Watershed restoration priorities used in the Table 4 are *high*, *medium*, and *low*, though only *medium* and *high* determinations were made.

**Table 4. Water Quality Impaired Waterbodies List**

| Waterbody Name | Watershed | Indicator | Beneficial Use Non-Support | Ranking Score | Restoration Priority |
|---|---|---|---|---|---|
| Colorado River | Imperial Reservoir Watershed | (8 points)<br>-agricultural return flows<br>-cultural plant loss<br>-plant diversity loss<br>-riparian habitat loss<br>-stream channelization<br>-unknown toxicity of a toxicant<br>-watershed nitrogen export<br>-groundwater vulnerability | (6 points)<br>-aquatic & wildlife (warmwater)<br>-cultural<br>-domestic water source | 14 | HIGH |
| Deer Island Lake | Imperial Reservoir Watershed | (3 points)<br>-cultural plant loss<br>-plant diversity loss<br>-riparian habitat loss | (6 points)<br>-aquatic & wildlife (warmwater)<br>-cultural<br>-unique waters (proposed) | 9 | MEDIUM |
| Lake Moovalya | Imperial Reservoir Watershed | (6 points)<br>-cultural plant loss<br>-plant diversity loss<br>-riparian habitat loss<br>-unknown toxicity of a toxicant<br>-watershed nitrogen export<br>-groundwater vulnerability | (6 points)<br>-aquatic & wildlife (warmwater)<br>-cultural<br>-domestic water source | 12 | HIGH |
| No-Name Lake | Imperial Reservoir Watershed | (3 points)<br>-cultural plant loss<br>-plant diversity loss<br>-riparian habitat loss | (6 points)<br>-aquatic & wildlife (warmwater)<br>-cultural<br>-unique waters (proposed) | 9 | MEDIUM |
| Twelve Mile Lake | Imperial Reservoir Watershed | (3 points)<br>-cultural plant loss<br>-plant diversity loss<br>-riparian habitat loss | (4 points)<br>-aquatic & wildlife (warmwater)<br>-cultural | 7 | MEDIUM |

## 6.0 Recommended Watershed Restoration Projects

The following watershed restoration projects are recommended for the Colorado River Indian Reservation.

### Watershed Restoration Project #1

Reestablish wetland plants of cultural significance in selected areas for protection of cultural uses

### Watershed Restoration Project #2

Construct wetlands for passive water quality treatment of agricultural return flows to the Colorado R.

### Watershed Restoration Project #3

Create vegetated buffer strips along roads to prevent concentrated runoff from entering watercourses

### Watershed Restoration Project #4

Create vegetated buffer strips along lake and stream shorelines to reduce or prevent sediment loading

### Watershed Restoration Project #5

Eradicate salt cedar and reestablish native vegetation in wetland (including riparian) areas

## 7.0 References


Bureau of Indian Affairs (BIA). 1982. *Final Environmental Impact Statement: Agricultural and Recreational Leasing and Development on the Colorado River Indian Reservation.* Prepared by Benham Blair & Associates, Inc. Oklahoma City, OK.

Bureau of Reclamation (BOR). 1979. *Colorado River Indian Reservation Unit, Arizona, Concluding Report.* Colorado River Water Quality Improvement Program, Irrigation Source Division.

Environmental Protection Agency. 1998. *Clean Water Action Plan: Restoring and Protecting America's Waters.* Washington, D.C.

Indian Health Service (IHS). 1987. *Pesticide Contamination of the Shallow Water Table on the Colorado River Indian Tribes Reservation.* Phoenix Area Office. Final Report, IHS Water Quality Study 6-07-0850.

Rural Community Assistance Corporation. 1996. *CRIT Onsite Wastewater Management Options Report.* Sacramento, CA.

U.S. Geological Survey (USGS). 1973. *Geohydrology of the Parker-Blythe-Cibola Area, Arizona and California.* USGS Professional Paper 486-G.

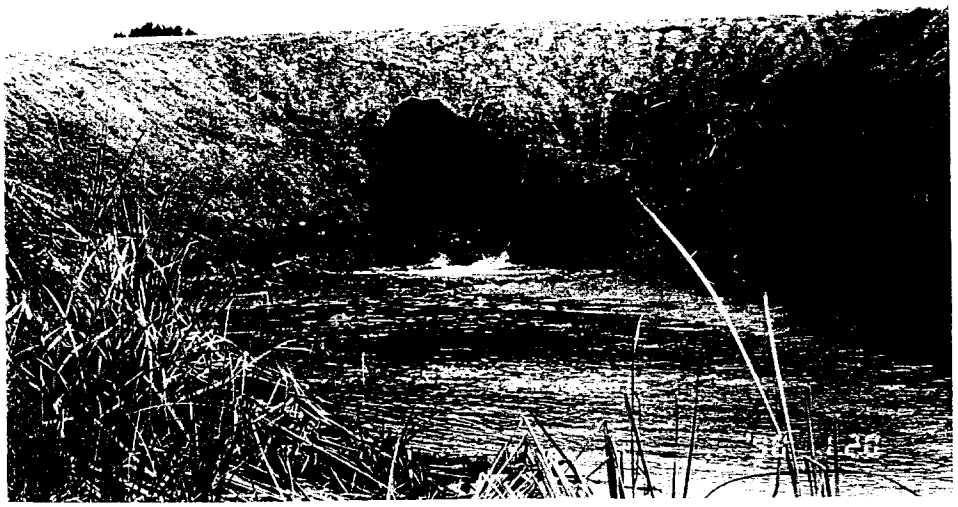
Water Quality Technology, Inc. (WQTI). 1998. *Draft Water Quality Standards for the Colorado River Indian Reservation.* Fort Collins, Colorado.

# Appendix A

# Selected Photographs of Waterbodies on the CRIT Reservation

1. Colorado River shoreline on the Colorado River Indian Reservation. Note salt cedar is the dominant vegetation on both sides of the river.

2. Agricultural return flow drain on the Colorado River Indian Reservation discharging to the Colorado River.



3. Road crossing an agricultural drain on the Colorado River Indian Reservation. Note lack of vegetation on sideslope.

4. Flow patterns resulting from concentrated stormwater runoff to a backwater lake at a trailer park on the Colorado River Indian Reservation.

# Appendix B

# USGS Watersheds on the CRIT Reservation

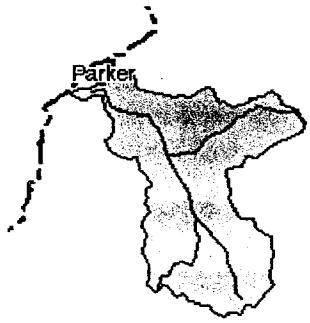
EPA United States Environmental Protection Agency

# Surf Your Watershed

Locate Your Watershed
JOIN DISCUSSIONS
ADD INFORMATION
SEARCH INFORMATION
MAP LIBRARY

## Bouse Wash

USGS Cataloging Unit: 15030105


**Places Involving this Watershed**

**States:**
Arizona
California

**Counties:**
La Paz
Riverside
Yuma

**Metropolitan Areas:**
Yuma

**Nominated American Heritage Rivers:**
None

**Other Watersheds:**
upstream
None

downstream
None

Large

## Environmental Profile

*Find general information integrated for this specific watershed*

**Assessments of Watershed Health**

Index of Watershed Indicators (provided by EPA)
Unified Watershed Assessments (UWA) (provided by States and Tri

**Environmental Information**

River Corridors and Wetlands Restoration Efforts
Environmental Web Sites:
- Real Time

Facilities regulated by EPA (provided by Envirofacts)
- Toxic releases (Source:TRI - Toxic Release Inventory)
- Hazardous Wastes (Source: RCRA - Resource Conservation Recovery Act)
- Superfund Sites (Source: CERCLA -Comprehensive Environmental Response, Compensation, and Liability Act)

EnviroMapper for Watersheds- (interactive mapping tool)

## Water

*Find information focused on water for this specific watershed*

Rivers and Streams in this Watershed: 3 (provided by EPA's first River Re
File)

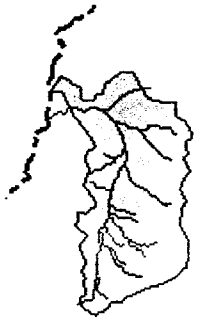
EPA United States Environmental Protection Agency

# Surf Your Watershed

Locate Your Watershed
JOIN DISCUSSIONS
ADD INFORMATION
SEARCH INFORMATION
MAP LIBRARY

## Tyson Wash

USGS Cataloging Unit: 15030106

**Places Involving this Watershed**

**States:**
Arizona
California

**Counties:**
La Paz
Riverside
Yuma

**Metropolitan Areas:**
Yuma

**Nominated American Heritage Rivers:**
None

**Other Watersheds:**
upstream
None

downstream
Imperial Reservoir

## Environmental Profile

*Find general information integrated for this specific watershed*

**Assessments of Watershed Health**

Index of Watershed Indicators (provided by EPA)
Unified Watershed Assessments (UWA) (provided by States and Tri

**Environmental Information**

River Corridors and Wetlands Restoration Efforts
Environmental Web Sites:
- Real Time

Facilities regulated by EPA (provided by Envirofacts)
- Toxic releases (Source:TRI - Toxic Release Inventory)
- Hazardous Wastes (Source: RCRA - Resource Conservation Recovery Act)
- Superfund Sites (Source: CERCLA -Comprehensive Environmental Response, Compensation, and Liability Act)

EnviroMapper for Watersheds- (interactive mapping tool)

## Water

*Find information focused on water for this specific watershed*

Rivers and Streams in this Watershed: 4 (provided by EPA's first River Re: File)